

# **Proposal for Exploring Collaborative Research Opportunities in Wound Care using Conventional Medicine and Traditional Chinese Medicine**

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## **Summary**

Chronic wounds affect 60 million people worldwide and cause a heavy burden on patients, families, and society. Although various treatments are available in western medicine, chronicity and delayed healing of wounds continue to impair lives. In China, cost-effective traditional Chinese medicine (TCM) has been used for thousands of years for the management of various chronic wounds. However, due to lack of availability and lack of research evidence, TCM treatments are not widely accepted in the United States. As TCM is gaining popularity throughout the world, an increasing number of people are gaining access to TCM therapy in the United States. As a result, there is a growing need to explore the possible benefits of traditional Chinese medicine on wound healing. Research studies comparing TCM and western approaches to wound healing may lead to more efficient and new technologies for wound healing in the future.

The objective of this initial work is to explore the possibilities of combined research studies using both western medicine and TCM in wound care. The empirical work will mainly be comprised of visits to the Center for Wound Healing Research at Daemen College and Dr. Tang's Lab at Beijing University of Chinese Medicine (BUCM). After full exposure and acculturation to research techniques and personnel in both institutions, the student researcher will draft a research proposal. The proposal will focus on collaborative research to investigate the integration of TCM and western modalities for the treatment of chronic wounds. Following these initial steps, subsequent research proposals will be submitted with hopes of securing external funding from both

Chinese and American agencies.

## **Statement of need**

Chronic wounds are wounds that do not heal, as compared to acute wounds, which follow a normal recovery path. All wounds originate in the acute stage of healing and derive from a variety of reasons including trauma, surgery, sickness, or bodily inadequacies, such as venous insufficiency. In general, any trauma that leads to tissue damage can result in a wound. Chronic wounds arise from conditions including diabetes, venous hypertension, alterations in health status, and immune function suppression.<sup>1</sup> Acute wounds become chronic wounds when biological and environmental factors combine to create a wound environment that fails to support a natural and timely healing process.<sup>2</sup> Many experts consider a wound chronic when it no longer follows the expected course of events or falls within the range of what is considered a normal healing trajectory.<sup>3</sup> Interruptions within the typical healing process occur more readily as the age of the patient increases and as the health condition of the patient decreases. Chronic wounds fail to respond to treatments, possess an unhealthy tissue quality, and fail to achieve proper closure, which leaves the wound susceptible to infection.<sup>1</sup>

Because of the various ways chronic wounds form, a variety of categories of chronic wounds exist. The main categories of chronic wounds include the following: venous stasis ulcers, diabetic ulcers, pressure ulcers, and any other wound that fails to heal properly.<sup>4,5</sup> Venous ulcers form from venous insufficiency caused by the improper pu



and medications, which can lead to very slow and painful recovery processes,<sup>11</sup> increased spread of infections, and longer hospital stays. Other widely-used advanced therapies include bioengineered skin substitutes, electrical stimulation, hyperbaric oxygen therapy, advanced drug delivery systems, materials that repair tissue (platelet-derived and autologous growth factor), and ultrasound.<sup>12</sup> On the other side of the world, TCM has been used in China for thousands of years for the management of various chronic wounds. Chinese herbal therapy

including diabetes and obesity. Although various treatments are available in western medicine for those suffering from open wounds, chronicity and delayed healing continue to impair lives and, in some cases, cause death. The United States is an aging society and as disorders like diabetes and obesity increase in prevalence, the importance of improving clinical treatment and outcomes for those with chronic wounds becomes paramount. The associated morbidity, mortality, and treatment costs of chronic wounds increase the need for better outcomes. In order to develop better treatment for chronic wounds, we need to study the possible benefits of TCM treatments and compare conventional medicine and TCM treatments in wound care. However, for the first step, we need to explore the possibility of collaborative research and become more familiar with both western medicine and TCM as they relate to wound research and wound care.

## **Feasibility**

Founded in 1956, the Beijing Universi(r)o(s)-3(e)-q0 7014.967 595.32 -841.92 reW nBT0 0 0 rg/TT1 1 Tf-0.000

both in western medicine and TCM.

Dr. Minke Tang, a research scientist and professor at BUCM, served as a research scholar at the University of Pittsburgh and University of California at Davis while visiting the United States. He is an expert in fundamental research studies of herbal products, especially Salvianolic acid B, which is an herbal extract that may be useful for wound care.

Daemen College, a private liberal arts college with a history of more than 60 years, is known for its physical therapy, physician assistant, and nursing programs in the United States.



**Phase II** (Dec., 2011- Jan., 2012): Visit to Dr. Tang's Lab in BUCM, China, and observe research and techniques utilized in the study of herbal products. Visit to TCM hospitals in Beijing, and exposure to common treatment methods used in chronic wound care in these hospitals. In addition, the student will also explore possible future directions of research under the supervision of Dr. Tang. As a result, a review paper regarding research of herbal products, TCM treatments of chronic wounds, and potential proteomic research areas related to both.

**Phase III** (Feb, 2012): At the end of phase 2, a summary will be submitted to the Daemen College exploring possible collaborative research projects in wound care. After discussion with associated personnel at these two institutions, a collaborative research proposal will be written and presented to Dr. Brogan, Dr. Edsberg, and Dr. Tang for final review. Finally, with agreement of associated personnel from both institutions, the research proposal will be submitted to Chinese and/or US government agencies for potential future funding.

**Phase IV** (Fall, 2012 and thereafter, not included in the initial proposal): develop proposals for external funding which bridge the implicit nature of both TCM and western medicine as they relate to wound care.

**Researcher (s)**

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